

UNITED STATES COURT OF APPEALS
FOR THE SIXTH CIRCUIT

JAMES NELSON, et al., (each
and every plaintiff in this
class action suit),
Plaintiffs-Appellants,

v.

TENNESSEE GAS PIPELINE
COMPANY; EL PASO
TENNESSEE PIPELINE
COMPANY,
Defendants-Appellees.

No. 99-6618

Appeal from the United States District Court
for the Western District of Tennessee at Jackson.
No. 95-01112—J. Daniel Breen, Magistrate Judge.

Argued: February 2, 2001

Decided and Filed: March 9, 2001

Before: GUY, NORRIS, and SILER, Circuit Judges.

COUNSEL

ARGUED: Gordon W. Jenkins, JENKINS LAW OFFICE,
Idaho Falls, Idaho, for Appellants. William H. Farmer,

WALLER, LANSDEN, DORTCH & DAVIS, Nashville, Tennessee, for Appellees. **ON BRIEF:** Gordon W. Jenkins, JENKINS LAW OFFICE, Idaho Falls, Idaho, for Appellants. William H. Farmer, Walter H. Crouch, WALLER, LANSDEN, DORTCH & DAVIS, Nashville, Tennessee, Russ M. Strobel, ALTHEIMER & GRAY, Chicago, Illinois, for Appellees.

OPINION

RALPH B. GUY, JR., Circuit Judge. Plaintiffs appeal from denial of their motion to alter or amend the court's earlier orders excluding plaintiffs' expert witness testimony and granting summary judgment to defendants on all of the plaintiffs' personal injury claims. Plaintiffs alleged that they were injured by environmental exposure to polychlorinated biphenyls (PCBs), which were released into the air, water, and soil surrounding a natural gas pipeline pumping station located in Lobelville, Tennessee. Defendants are the Tennessee Gas Pipeline Company (TGPC), which operated the station, and its parent company El Paso Tennessee Pipeline Company (formerly known as Tenneco, Inc.).

Plaintiffs claim that the district court abused its discretion by excluding the expert testimony of Kaye H. Kilburn, M.D., and Alan R. Hirsch, M.D., under Fed. R. Civ. P. 702 and the standards adopted in *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993). Plaintiffs also argue that the district court abused its discretion by failing to either hold an evidentiary hearing on the motions *in limine*, or provide plaintiffs an opportunity to offer other expert testimony. After careful review of the record, the applicable law, and the arguments presented on appeal, we find no abuse of discretion and affirm for the reasons ably articulated in the

magistrate judge's order of August 31, 1998.¹ We write additionally to address the plaintiffs' specific claims of error.

I.

Defendants operate a natural gas pipeline running from the Gulf Coast to New England and numerous compressor stations along the way that restore pressure to the natural gas. The compressor station in Lobelville, Tennessee (Station 79), is located on property along the Marrs Branch Creek. Plaintiffs, who lived, worked, or spent time near Station 79 and the Marrs Branch Creek, alleged that defendants' use of Pydraul AC as a lubricant in the compressors at Station 79 resulted in the release of PCB-contaminated condensates into the environment.

Until 1971, Pydraul AC was manufactured with a fire-retardant PCB known as Aroclor 1254 in concentrations of 500 parts per million (ppm) or greater. Defendants purchased this lubricant for use at Station 79 between 1954 and 1969. In 1978, Congress banned the production and sale of PCBs and the use of PCBs other than in a totally enclosed manner, with some limited exceptions. *See* 15 U.S.C. § 2605(e)(2)(A). The EPA issued regulations, effective July 2, 1979, restricting the manufacture, distribution, use, storage, and disposal of PCBs. *See* 40 C.F.R. §§ 761.1-761.218. Plaintiffs maintain that PCBs have been detected on and near the site in concentrations that exceed allowable amounts. In 1993, the EPA charged defendants with improper use and disposal of PCB-contaminated condensates and materials at Station 79 as well as thirty-five other compressor stations. A consent decree was entered in August 1994, under which Tenneco paid over \$6 million in civil penalties and agreed to set aside funds for cleanup efforts.

¹*See Nelson v. Tenn. Gas Pipeline Co.*, No. 95-1112, 1998 WL 1297690 (W.D. Tenn. Aug. 31, 1998).

Plaintiffs commenced this action in May 1995, alleging that they suffered injuries as a result of long-term environmental exposure to PCBs. Plaintiffs' claims are brought under the tort theories of negligence, trespass, nuisance, and strict liability. In January 1997, the parties selected seven "flagship plaintiffs" who consented to having the magistrate judge resolve their claims, and the case was reassigned to the magistrate judge for all further proceedings and entry of judgment. To establish medical causation, plaintiffs relied upon the expert testimony of Drs. Kilburn and Hirsch. Kilburn studied ninety-eight adults from Lobelville, including the seven flagship plaintiffs, and compared them to a control group of fifty-eight adults from other Tennessee communities.² Kilburn's results were set forth in a paper entitled *Visual and Neurobehavioral Impairment Associated with Polychlorinated Biphenyls (PCBs) From a Natural Gas Pipeline*. Kilburn and Hirsch also conducted separate evaluations of the seven flagship plaintiffs.

Defendants moved to exclude the testimony of Kilburn and Hirsch. Defendants also filed a motion for summary judgment arguing that without that expert testimony, plaintiffs could not establish causation. On August 31, 1998, the magistrate judge issued his decision excluding the testimony because it did not meet the standards for admission of scientific evidence under *Daubert* and its progeny. In a separate order entered a few days later, the magistrate judge granted summary judgment to defendants as to plaintiffs' personal injury claims on the grounds that the evidence was insufficient to establish by a preponderance of the evidence that plaintiffs suffered personal injuries as a result of exposure to PCBs from Station 79.

Plaintiffs filed a motion to amend these orders arguing that the magistrate judge misunderstood "the extent of the

² Of the ninety-eight Lobelville subjects, ninety-four were plaintiffs in this action before being evaluated and several more joined the lawsuit later.

The magistrate judge properly rejected the circular reasoning that the plaintiffs must have been exposed to the PCBs because PCBs were present in the environment and plaintiffs showed symptoms.

In addition, the magistrate found that Hirsch failed to account for confounding factors, or identify scientific literature that supported his theory that the symptoms at issue can be caused by exposure to PCBs. Although plaintiffs repeatedly state that Hirsch referred to a list of 120 scientific articles, they fail to identify any specific literature that supports his conclusion with respect to causation. Our review of the record convinces us that the magistrate judge did not abuse his discretion by finding that Hirsch's testimony was not based upon valid scientific knowledge and would not assist the trier of fact.

AFFIRMED.

As the Court in *Daubert* stated, the inquiry must be “solely on principles and methodology, not on the conclusions that they generate.” 509 U.S. at 595. However, as the Court later clarified, “conclusions and methodology are not entirely distinct from one another.” *Joiner*, 522 U.S. at 146. A district court is not required to admit expert testimony “that is connected to existing data only by the *ipse dixit* of the expert. A court may conclude that there is simply too great an analytical gap between the data and the opinion proffered.” *Id.* The magistrate judge did not abuse his discretion by finding that Kilburn’s testimony presented just such a case.

3. Dr. Hirsch’s Testimony

Hirsch, board certified in neurology and psychiatry, examined the seven flagship plaintiffs and testified that their various conditions were more likely than not caused by exposure to PCBs. He concluded that of the seven flagship plaintiffs, all suffered from encephalopathy, four from polyneuropathy, three from cephalgia (headaches), one from hyposmia (reduced ability to smell), two from hypogeusia (reduced ability to taste), one from optic neuropathy, one from autonomic neuropathy, and one from phantosmia (hallucinating a smell). The magistrate found, over defendant’s objections, that Hirsch was qualified as an expert, but excluded his testimony because his opinion that these conditions were caused by exposure to PCBs from Station 79 was not based on valid scientific knowledge.

Plaintiffs emphasize that the standardized diagnostic tests used by Hirsch are generally accepted methods for detecting neurological impairments. The acceptance of those tests, however, does not demonstrate the scientific validity and reliability of his opinion that the deficits he observed were caused by exposure to PCBs. It is the methodology by which he reached his opinion concerning causation that must be found reliable. Hirsch admitted no knowledge concerning the actual exposure of the seven plaintiffs to PCBs or the temporal relationship between their exposure and symptoms.

evidence present in this case to support the validity of the plaintiffs’ medical expert testimony.” Although the motion was made under Fed. R. Civ. P. 52(b), which contemplates a trial without a jury, the motion was nonetheless treated as a timely motion to alter or amend judgment under Fed. R. Civ. P. 59(e). After full briefing, the magistrate judge denied plaintiffs’ motion because they had not shown a clear error of law, newly discovered evidence, an intervening change in the law, or manifest injustice. *See GenCorp., Inc. v. Am. Int’l Underwriters*, 178 F.3d 804, 834 (6th Cir. 1999). This timely appeal followed.

II.

We review the magistrate judge’s decision to exclude the testimony of plaintiffs’ expert witnesses for an abuse of discretion, even when that decision results in the entry of summary judgment. *Gen. Elec. Co. v. Joiner*, 522 U.S. 136, 142-43 (1997). Further, the same abuse of discretion standard applies to the magistrate judge’s decisions regarding *how* to determine the admissibility of the evidence in question. *Kumho Tire Co. v. Carmichael*, 526 U.S. 137 (1999). “A district court would necessarily abuse its discretion if it based its ruling on an erroneous view of the law or a clearly erroneous assessment of the evidence.” *Cooter & Gell v. Hartmarx Corp.*, 496 U.S. 384, 405 (1990).

A. Evidentiary Hearing

Quoting at length from *In re TMI Litigation*, 199 F.3d 158, 159 (3d Cir. 2000), *modifying* 193 F.3d 613 (3d Cir. 1999), *cert. denied*, 120 S. Ct. 2238 (2000), plaintiffs contend that the magistrate judge abused his discretion by deciding defendants’ motions *in limine* without ordering an evidentiary hearing. Plaintiffs concede that they did not request a hearing, but imply that a hearing is always required. On the contrary, we have stated that the district court is not required to hold an actual hearing to comply with *Daubert*. *See Greenwell v. Boatwright*, 184 F.3d 492, 498 (6th Cir. 1999).

While we did not analyze the issue in *Greenwell*, the Supreme Court's decision in *Kumho* makes clear that whether to hold a hearing is a question that falls within the trial court's discretion.

The trial court must have the same kind of latitude in deciding *how* to test an expert's reliability, and to decide whether or when special briefing or other proceedings are needed to investigate reliability, as it enjoys when it decides *whether or not* that expert's relevant testimony is reliable.

Kumho, 526 U.S. at 152 (emphasis in original). With this in mind, we find no abuse of discretion by the magistrate judge in failing to order an evidentiary hearing on the motions *in limine*. The admissibility of the testimony of Kilburn and Hirsch under *Daubert* was fully briefed by the parties. Further, it is clear from the extensive record and the magistrate judge's opinion that there was an adequate basis from which to determine the reliability and validity of the experts' opinions.

³ Even under the Third Circuit's approach, which we have not adopted, plaintiffs could not demonstrate an abuse of discretion in this case. In *TMI*, the court stressed its belief that *in limine* hearings are important in making reliability determinations, even in the absence of a request for one; especially when the exclusion of evidence under *Daubert* will result in summary judgment being granted. See *TMI*, 199 F.3d at 159 (quoting *Padillas v. Stork-Gamco, Inc.*, 186 F.3d 412, 417 (3d Cir. 1999)). A hearing is important, the court explained, "because of the [d]istrict[c]ourt's 'independent responsibility for the proper management of complex litigation'" and in order that the plaintiff have "an opportunity to be heard" on the critical issues of scientific reliability and validity." *Id.* (quoting *Padillas*, 186 F.3d at 417). Distinguishing *Padillas*, the court in *TMI* also clarified that *Padillas* was not intended to suggest that a hearing is always required for *Daubert* gatekeeping. In fact, the Third Circuit recently distinguished *Padillas* because there the expert's opinion was so conclusory and the record so scant that the district court could not have evaluated how the expert arrived at his opinions. See *Oddi v. Ford Motor Co.*, 234 F.3d 136, 151-54 (3d Cir. 2000) (petition for cert. filed 1/11/01).

as encephalopathy and cigarette smoking the most common cause of airway obstruction. He also testified that the symptoms could be caused by drug use, living in mobile homes, exposure to chemicals in solvents and spray paints, and working with textiles. As the magistrate judge found, the record is "replete" "with evidence of other factors or agents which, according to Dr. Kilburn's own testimony, may have been responsible for the symptoms suffered by the flagship plaintiffs – evidence which, it appears, Dr. Kilburn utterly ignored." We agree with the magistrate judge that there was "simply no basis for Dr. Kilburn's assumption that PCBs, and not one of numerous other factors, was the cause of plaintiffs' reported maladies."

Without any citation to the record, plaintiffs claim next that Kilburn actually included the thirty-three members of the Mormon Church from Waverly, Tennessee, in the Tennessee control group in order to account for the confounding factors of alcohol use, drug abuse, and cigarette smoking since such activities are discouraged by the church. There is no indication in the record, however, that Kilburn included this group of referents for this purpose, or that he analyzed the data to account for such factors.

While plaintiffs assert generally that there are commonly observed symptoms of PCB exposure documented in the scientific literature, Kilburn actually admitted that no scientific literature supports his opinion that PCBs can cause the brain disorder he refers to as encephalopathy. Indeed, plaintiffs do not specifically contest any of the findings concerning the lack of general acceptance for Kilburn's theory that PCBs can cause the kind of symptoms identified in the Lobelville plaintiffs. Shifting focus, plaintiffs claim instead that the battery of tests he used are generally accepted as a means of measuring neurological impairment. Even assuming that this were true, that does not demonstrate the scientific validity of the methodology used to conclude that PCBs caused the injuries reflected by the results of those tests.

impairments and mood disorders before ever moving to Lobelville.

The magistrate judge carefully analyzed the question of whether Kilburn considered and accounted for confounding factors which could be responsible for the impairments and health problems found in the plaintiffs. Without contesting any specific findings, plaintiffs assert that Kilburn's statistical analysis accounted for any significant confounding factors.⁹

Plaintiffs explain the statistical analysis as follows. The ninety-eight Lobelville subjects and the fifty-eight unexposed referents completed questionnaires and were subjected to a battery of tests intended to detect neurological and pulmonary abnormalities. The results were given numerical values, and the abnormal scores were compiled. When the total score reached a certain level of significance, Kilburn concluded that those ill effects were, more probably than not, caused by PCB exposure. This kind of cohort epidemiological study hopes to establish an association between exposure and disease, but an association does not mean there is a cause and effect relationship. *See* REFERENCE MANUAL ON SCIENTIFIC EVID. 333, 348 (2d ed. 2000). Before any inferences are drawn about causation, the possibility of other reasons for the association must be examined, including chance, biases such as selection or informational bias, and confounding causes. *Id.* at 354.

Even if this methodology validly showed that plaintiffs were impaired (which defendants do not concede), it did not provide a valid scientific basis for the opinion on causation. As Kilburn admitted, these tests could not identify what caused the impairments, and there were a number of other possible causes or confounding factors. He testified that alcohol was the most common cause of what he characterized

⁹ Examination of the study itself suggests that statistical adjustments were made only to account for differences in age, education, gender, and height between the Lobelville subjects and the control group.

B. Opportunity to Cure

Plaintiffs also claim that the magistrate judge abused his discretion by not affording them an opportunity to obtain expert testimony to remedy deficiencies in the proffered testimony before granting summary judgment. They argue that considerations of equity and fair play demand that they have an opportunity to cure the deficiencies in their proofs. This assertion, made without any authority to support it, is without merit. Plaintiffs had adequate opportunity to develop their expert testimony, test their theories, and respond to defendants' specific challenges to the testimony. We recently rejected a similar claim that the district court abused its discretion by refusing a request to reopen the *Daubert* inquiry after the plaintiff's proffered expert testimony was found to be inadmissible under Rule 702. *See Pride v. BIC Corp.*, 218 F.3d 566, 578-79 (6th Cir. 2000).

Also instructive is the decision in *Weisgram v. Marley Co.*, 528 U.S. 440 (2000), which involved a challenge to the admissibility of expert witness testimony in a product liability action. Over the defendant's objections, the plaintiff offered the testimony of three expert witnesses and obtained a favorable verdict at trial. After the court of appeals found that the expert witness testimony did not satisfy *Daubert* and instructed that judgment be entered as a matter of law, the Supreme Court held that an appellate court's authority "to direct the entry of judgment as a matter of law extends to cases in which, on excision of testimony erroneously admitted, there remains insufficient evidence to support the jury's verdict." *Id.* at 457. In so holding, the Supreme Court observed the following:

It is implausible to suggest, post-*Daubert*, that parties will initially present less than their best expert evidence in the expectation of a second chance should their first try fail. We therefore find unconvincing [plaintiff's] fears that allowing courts of appeals to direct the entry of judgment for defendants will punish plaintiffs who could

have shored up their cases by other means had they known their expert testimony would be found inadmissible. . . . In this case, for example, although [plaintiff] was on notice every step of the way that [defendant] was challenging his experts, he made no attempt to add or substitute other evidence.

Id. at 455-56. We likewise find that fairness does not require that a plaintiff, whose expert witness testimony has been found inadmissible under *Daubert*, be afforded a second chance to marshal other expert opinions and shore up his case before the court may consider a defendant's motion for summary judgment.

C. *Daubert* Inquiry

In *Daubert*, the Supreme Court held that the Federal Rules of Evidence, in particular Fed. R. Evid. 702⁴ and 104(a), govern the admission of expert witness testimony and require that the trial judge "ensure that any and all scientific testimony or evidence admitted is not only relevant, but

⁴Effective December 1, 2000, Fed. R. Evid. 702 was amended to reflect the *Daubert* inquiry and now reads:

If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise, if (1) the testimony is based upon sufficient facts or data, (2) the testimony is the product of reliable principles and methods, and (3) the witness has applied the principles and methods reliably to the facts of the case.

Id. (emphasis added). The emphasized language, added by the amendment, is consistent with the gatekeeping function articulated in *Daubert* and *Kumho*. The Advisory Committee Notes explain that no specific factors were articulated in the new rule because the factors mentioned in *Daubert* are neither exclusive, nor dispositive, and do not apply to every type of expert testimony. We are satisfied that the amendment to Fed. R. Evid. 702 does not alter the standard for evaluating the admissibility of the experts' opinions in this case.

heavily upon Kilburn's failures to account for "confounding factors" that could have caused similar symptoms, establish a temporal relationship between exposure to PCBs in Lobelville and the reported maladies, demonstrate that the plaintiffs received doses of PCBs sufficient to make them ill, or show that his theories enjoyed general acceptance. We agree that the flaws in the methodology underlying Kilburn's opinion that PCB exposure caused the plaintiffs' impairments, as well as a lack of support for the proposition that environmental PCB exposure can cause the impairments Kilburn found in the Lobelville subjects, render his opinion unreliable.

With respect to the question of dose, plaintiffs cannot dispute that Kilburn made no attempt to determine what amount of PCB exposure the Lobelville subjects had received and simply assumed that it was sufficient to make them ill. On appeal, plaintiffs argue only that because PCBs were present in the environment in excess of allowable limits and plaintiffs lived and worked in the area, they must have been exposed at a level that could cause neurological and lung impairments.⁸ This is a significant flaw in Kilburn's methodology as his cohort epidemiological study seeks to demonstrate a relationship between exposure and disease by comparing those who have been exposed with those who have not. Without any factual basis from which a jury could infer that the plaintiffs were in fact exposed to PCBs from Station 79, the reasoning and methodology underlying the testimony is not scientifically valid. *See, e.g., Conde v. Velsicol Chem. Corp.*, 24 F.3d 809 (6th Cir. 1994) (chlordane exposure). This defect goes hand-in-hand with the failure to evaluate or show a temporal relationship between exposure and symptoms, which is most glaringly illustrated by evidence that some of the flagship plaintiffs experienced cognitive

⁸In fact, the record indicates that five of the seven flagship plaintiffs had their blood tested for the presence of PCBs, but none were above the normal range.

Plaintiffs also seem to argue that the *Kumho* decision, issued after plaintiffs had filed this appeal, represented a liberalizing “retrenchment” from *Daubert* that favored the admission of expert testimony. This characterization is simply not accurate. While *Kumho* clarified that the trial court must determine what factors are pertinent to the reliability determination, it also reiterated the trial court’s gatekeeping obligation and extended it to all expert testimony. If anything, *Kumho* supports the magistrate judge’s consideration of factors not mentioned by the Supreme Court, including the fact that Kilburn’s study was conducted and the experts’ opinions were formed for purposes of litigation. See *Daubert v. Merrell Dow Pharm., Inc. (Daubert II)*, 43 F.3d 1311, 1317 (9th Cir. 1995). This factor is consistent with our observation that close judicial analysis of expert testimony is necessary “because expert witnesses are not necessarily always unbiased scientists.” *Turpin v. Merrell Dow Pharm., Inc.*, 959 F.2d 1349, 1352 (6th Cir. 1992). Here, the magistrate did not abuse his discretion by considering this factor as he did, or by concluding that “the fact that the study was performed in connection with litigation and funded by plaintiffs’ counsel does not militate in Dr. Kilburn’s favor.”

2. Kilburn’s Methodology

In examining the scientific validity of the methodology Kilburn used to conclude that the plaintiffs were injured as a result of exposure to PCBs, the magistrate judge focused most

Local Referents, involved subjects who were exposed to a number of neurotoxic chemicals, among which PCBs were not a principal contaminant. To the extent that these studies are relied upon to demonstrate that the neurological testing undertaken in the Lobelville study has been the subject of peer review, plaintiffs misunderstand why Kilburn’s methodology was found not to be reliable. The magistrate judge did not reject Kilburn’s opinions because the use of his battery of tests for neurophysiologic or neuropsychologic impairments were not valid or had not been peer reviewed (although the defendants did challenge them). Rather, it was Kilburn’s opinions on causation that were found not to be based upon valid scientific methodology.

reliable.” *Daubert*, 509 U.S. at 589. The Supreme Court clarified in *Kumho* that this gatekeeping obligation applies to all expert testimony. *Kumho*, 526 U.S. at 141. In discussing scientific knowledge, the Court in *Daubert* explained:

The adjective “scientific” implies a grounding in the methods and procedures of science. Similarly, the word “knowledge” connotes more than subjective belief or unsupported speculation. . . . Of course, it would be unreasonable to conclude that the subject of scientific testimony must be “known” to a certainty; arguably, there are no certainties in science. . . . But, in order to qualify as “scientific knowledge,” an inference or assertion must be derived by the scientific method. Proposed testimony must be supported by appropriate validation—*i.e.*, “good grounds,” based on what is known. In short, the requirement that an expert’s testimony pertain to “scientific knowledge” establishes a standard of evidentiary reliability.

Daubert, 509 U.S. at 590. In addition, Rule 702 requires that the testimony “assist the trier of fact to understand the evidence or to determine a fact in issue.” This question of relevance, described as “fit,” “is not always obvious, and scientific validity for one purpose is not necessarily scientific validity for other, unrelated purposes.” *Id.* at 591. Thus, the trial judge, faced with a proffer of expert scientific testimony, must determine whether the expert

is proposing to testify to (1) scientific knowledge that (2) will assist the trier of fact to understand or determine a fact in issue. This entails a preliminary assessment of whether the reasoning or methodology underlying the testimony is scientifically valid and of whether that reasoning or methodology properly can be applied to the facts in issue.

Id. at 592-93 (footnote omitted). It is the proponent of the testimony that must establish its admissibility by a preponderance of proof. *See Daubert*, 509 U.S. at 592 n.10.

The Court in *Daubert* identified several factors that may bear on the inquiry, but took care to emphasize that the inquiry is “a flexible one.” *Id.* at 594.⁵ In *Kumho*, the Court reiterated that the factors mentioned in *Daubert* were neither definitive, nor exhaustive, and may or may not be pertinent to the assessment in any particular case. *Kumho*, 526 U.S. at 141. Noting that the *Daubert* factors will often be appropriate in determining reliability, the Court in *Kumho* found that the trial court must consider whether the factors are reasonable measures of reliability in a given case. *Id.* at 152.

After careful review of the voluminous record in this matter and the extensive arguments of the parties, we are convinced that the magistrate judge did not abuse his discretion in determining that the testimony of plaintiffs’ expert witnesses was not grounded upon valid scientific methodology and was not reliable. Since the magistrate judge’s opinion correctly states the law and thoroughly analyzes the appropriate factors in determining the reliability of the expert witnesses’ testimony, it would serve no useful purpose to re-state the evidence presented or the reasoning with which we agree. Instead,⁶ we will directly address plaintiffs’ challenges on appeal.

⁵ Those factors were: (1) whether a theory or technique can be or has been tested; (2) whether it has been subjected to peer review and publication; (3) whether a technique has a known or potential rate of error and the existence of standards controlling its operation; and (4) whether the theory or technique enjoys general acceptance in a relevant scientific community.

⁶ Acknowledging *Daubert*, plaintiffs nonetheless question its wisdom and urge that we “temper” the gatekeeping function in this case because they have alleged that a subsidiary with \$20 billion in annual revenue inexcusably “dumped” PCBs into the environment knowing that innocent children lived and played in the area. The egregiousness of plaintiffs’

1. Proper Factors and *Kumho*

Plaintiffs contend that the magistrate judge abused his discretion by failing to recognize those factors deserving of weight and those that should not have been relied upon in evaluating the expert testimony. Accusing the trial court of “slavish adherence” to the *Daubert* factors, plaintiffs argue specifically that the lack of publication or other peer review should have been disregarded because it only demonstrates that the “novel” opinions are at the “forefront of toxicology.” We disagree.

While one of the last of the factors mentioned in the magistrate’s evaluation and not considered dispositive, the lack of peer review and publication was plainly relevant to the determination of whether Kilburn’s causation theory was based upon good science. *See Daubert*, 509 U.S. at 594 (“submission to the scrutiny of the scientific community is a component of ‘good science,’ in part because it increases the likelihood that substantive flaws in methodology will be detected”). Nor is this factor made irrelevant because Kilburn has authored two other studies which were peer reviewed. Although plaintiffs broadly assert that those studies reached similar conclusions related to other PCB exposures, it is clear that they do not demonstrate the reliability of the theory that the plaintiffs’ environmental exposure to PCBs can, and did cause the impairments and ailments that they claim.⁷

allegations do not demonstrate the reliability of their experts’ opinions concerning causation.

⁷ Kilburn’s “Firemen Study,” entitled *Neurobehavioral Dysfunction in Firemen Exposed to Polychlorinated Biphenyls (PCBs): Possible Improvement after Detoxification*, was a preliminary report intended to alert others to the possibility of neurobehavioral impairments in fourteen firemen who were acutely exposed to heated PCBs, presumably containing the more toxic dibenzofurans (PCDFs), while fighting a transformer fire. Also, Kilburn’s “Muscle Shoals Study,” entitled *Neurobehavioral Testing of Subjects Exposed Residentially to Groundwater Contaminated From an Aluminum Die-Casting Plant and*